REMARKS

Claims 1-31 are currently pending for the Examiner's review and consideration. No new matter has been added. Thus, Applicants respectfully request the consideration of the following remarks at this time.

THE REJECTIONS UNDER 35 U.S.C. § 103(A) SHOULD BE RECONSIDERED AND WITHDRAWN

Claims 1, 3-4, and 14-24 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,147,042 to Yata *et al.* ("Yata") for the reasons set forth on pages 3-4 of the Office Action. Applicants respectfully traverse.

Yata discloses a composition for removing etching residue from a semiconductor comprising a polyphosphoric acid-urea condensate copolymer (or salt thereof). *See* Yata, columns 3-4. Applicants previously noted that the claimed invention recites the use of phosphoric acid (*see, e.g.*, instant claim 1) or in some cases, a salt thereof (*see, e.g.*, instant claim 24), neither of which are polymeric but in the small molecule form, H_3PO_4.

The Examiner responded by stating that Yata discloses condensates and copolymers that are reaction products of ortho-phosphoric acid and urea. Yata, column 3, lines 63-65. The Examiner also responded by asserting that the ortho-phosphoric acid (H_3PO_4) and the urea may be used alone or in combination, citing for this proposition Yata at column 4, lines 22-25.

Applicants respectfully traverse the latter assertion, and respectfully submit that the Examiner has misread and misunderstood the reference. Yata discloses two types of compounds made from the reaction products of ortho-phosphoric acid and urea, *i.e.*, polyphosphoric acid-urea condensates and polyphosphoric acid-urea polymers. It is these reaction products, and NOT the reactants that Yata teaches may be used alone or in combination at column 4, lines 22-25. The Examiner's citation is to a misplaced modifier – it is not the phosphoric acid and urea that can be used separately or in combination, but the polyphosphoric acid-urea condensate and the polyphosphoric acid-urea polymer.

As a result, because Yata does not disclose cleaning or residue-removing compositions comprising H_3PO_4 (phosphoric acid), Applicants respectfully submit that Yata does not render obvious claims 1, 3-4, and 14-24. Further, in light of the foregoing, Applicants respectfully request that the obviousness rejection be reconsidered and withdrawn.

Claims 1-13 and 25-31 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,030,932 to Leon *et al.* ("Leon"), in view of U.S. Patent No. 6,162,738 to Chen *et al.* ("Chen"), for the reasons set forth on pages 4-6 of the Office Action. Applicants respectfully traverse.

Leon discloses a cleaning composition comprising water, a fluorine-containing compound, and either (a) a compound selected from an amine, a quaternary ammonium compound, and ammonium hydroxide, or (b) hydroxylamine or a salt thereof. *See* Leon Abstract. Leon does not disclose the presence of phosphoric acid in this cleaning composition, but teaches that hydroxylamine can be reacted with an acid ("*e.g.*, nitric acid or sulfuric acid;" *see* Leon, column 4, line 40) to form a hydroxylamine salt, which can then be added to the composition. Leon also teaches that hydroxylammonium phosphate is a potentially useful hydroxylamine salt. *See Id.*, column 4, line 45.

In contrast, claim 1, for example, recites a cleaning or residue-removing composition comprising hydroxylamine or a salt, phosphoric acid, and water. While initially it might seem like hydroxylammonium phosphate (chemical formula = $(H_3N^+OH)_3[(PO_4)^{-3}]$) is merely a reaction product of hydroxylamine and phosphoric acid, such is not necessarily the case. Indeed, the dissociation pKa of the three phosphoric acid protons are approximately 2.1, 7.2, and 12.7, respectively. Thus, in order for all three protons on phosphoric acid to be dissociated from the phosphate anion in a solution (and thus to form each of the three hydroxylammonium cations required to form hydroxylammonium phosphate), the pH of that solution would have to be above about 12.7, which is extremely basic/caustic. While Leon teaches that its compositions can have a wide pH range (2-9), it also cautions against solutions that are too caustic, noting that, at extreme pH values, "the metal layers on the substrate are subject to attack." *See Id.*, column 5, lines 13-21. Therefore, Applicant respectfully submits that Leon teaches one of ordinary skill in the art away both (a) from the use of hydroxylammonium phosphate in the absence of phosphoric acid and (b) from the creation of hydroxylammonium phosphate *in situ* in solution from hydroxylamine and phosphoric acid reagents. Thus, Applicants respectfully submit that Leon teaches away from the claimed invention, as recited in claims 1-13 and 25-31.

The Examiner has not disputed Applicants distinguishing of Leon from claims 1-13 and 25-31. In fact, Applicants respectfully submit that instant claims 29-31 should not be included in

this rejection, as they recite dilute aqueous cleaners and residue removers consisting essentially of components that each contain neither hydroxylamine or a salt thereof nor a fluoride-containing compound, both of which are required by Leon. *See, e.g.*, Leon at column 4, lines 35-36. Although Chen is addressed more fully below, Applicants respectfully submit that Chen does not disclose nor suggest any of the components of claims 29-31 other than phosphoric acid, nor does it provide one of ordinary skill in the art with the requisite motivation or expectation of success in modifying the disclosure of Leon to attain the invention recited in those claims. Applicants respectfully submit, therefore, that claims 29-31 are allowable over the prior art of record and respectfully request reconsideration and withdrawal of their rejection.

Applicants additionally offer that Chen, like Leon, also does not render obvious instant claims 1-13 and 25-31. Chen teaches cleaning compositions consisting essentially of hydrochloric acid (HCl), hydrogen peroxide (H_2O_2), and water. *See, e.g.*, Chen at column 2, lines 14-16 and 51-52, and at column 3, lines 1-3, 13-15, 30-34, and 40-42. Chen also discloses, generally, dilute aqueous cleaning compositions including a mineral acid, preferably hydrochloric acid, and hydrogen peroxide (the other ingredient, water, being implied by the use of the term "aqueous"). *Id.* at column 7, lines 14-21. Applicants respectfully submit that Chen does not disclose or suggest, however, any oxidizing agent other than hydrogen peroxide, nor any other additional components for its dilute aqueous compositions, whether or not they would materially affect the cleaning function of the compositions.

Further, while Chen does mention mineral acids such as phosphoric acid as being potentially useful in cleaning compositions (*see* Chen, column 7, lines 17-20), Chen does not disclose or suggest its combination with nitrogen-containing compounds such as hydroxylamine or a salt thereof. Because Chen does not even disclose all the elements of the invention recited in currently amended claims 1-13 and 25-31, Applicants respectfully submit that Chen, like Leon, does not render these claims obvious.

Even assuming, *arguendo*, that Chen teaches the functional equivalence of phosphoric acid with other mineral acids, Applicants respectfully submit that Chen still does not remedy the deficiencies of Leon. Because Chen teaches various mineral acids in combination only with hydrogen peroxide and water (*see id.*, column 7, lines 14-21), Applicants respectfully submit that Chen does not provide one of ordinary skill in the art with the motivation to add that phosphoric acid to any other composition other than one containing hydrogen peroxide.

Further, Leon does not disclose or suggest the addition of phosphoric acid, or even a mineral acid for that matter, into its compositions; there is no mention of it as an oxidizer therein, nor is there any mention of it as a pH regulating agent, nor with other enumerated acids as a corrosion inhibitor. To the extent that the Examiner has indicated to the contrary, Applicants respectfully traverse.

Leon only teaches the use of "an acid, e.g., nitric acid or sulfuric acid," as a potential ***reactant*** for creating the hydroxylamine salt that is actually added to the composition disclosed therein, and does not disclose nor suggest the use of mineral acids, or phosphoric acid in particular, **in the composition of Leon's invention**, contrary to the Examiner's assertion on pages 4-5 of the Final Office Action. Indeed, as Applicants have noted above, Leon discloses as a potential hydroxylamine salt for its compositions hydroxylammonium phosphate (chemical formula = $(H_3N^+OH)_3[(PO_4)^{-3}]$), in which, obviously, phosphoric acid must be a ***reactant***. However, as Applicants previously stated, in order for any hydroxylamine (that is not a salt) and phosphoric acid to be separately formed *in situ* from the hydroxylammonium phosphate taught by Leon, the pH of the solution would have to be at least 12.7, and Leon teaches not only that its compositional pH values are well below that (broadly, pH 2-9; preferably, pH 2-6) but also that, under such basic/caustic conditions, "the metal layers on the substrate are subject to attack." *See* Leon at column 5, lines 13-21.

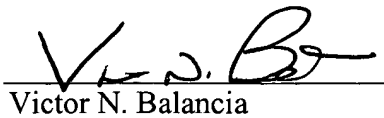
As Applicants can find no motivation for one of ordinary skill in the art to combine Leon and Chen in such a way as to attain the invention recited in claims 1-13 and 25-31, Applicants respectfully submit that the rejection is based on improper hindsight and respectfully request its reconsideration and withdrawal. Further, if the Examiner continues to assert the obviousness of claims 1-13 and 25-31 over the combination of Leon and Chen, Applicants respectfully request that it be stated on the record where in the references themselves the motivation to combine lies, as this is required for maintaining an obviousness rejection. *See In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002).

As a result, Applicants respectfully submit that neither Leon nor Chen individually, nor their combination renders obvious instant claims 1-13 and 25-31. Thus, for any or all of the foregoing reasons, Applicants respectfully submit that the obviousness rejection of claims 1-13 and 25-31 has been overcome and respectfully request that it be reconsidered and withdrawn.

No fee is believed to be due for this submission, as the date of submission of this filing, April 4, 2005, is the first business day after the three-month date (April 3, 2005) from the mailing of the Final Office Action (dated January 3, 2005). Should any fees be required, however, please charge the required fee(s) to Morgan, Lewis & Bockius LLP Deposit Account No. 50-0310. A copy of this sheet is enclosed for such purpose.

Respectfully submitted,

Date: April 4, 2005



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